ZTX1049A

25V NPN SILICON PLANARR MEDIUM POWER TRANSISTOR

Features

- BV_{CEO} > 25V
- Maximum Continuous Current $I_{C(cont)}$ = 4A
- Up to 20A Peak Current
- Low Saturation Voltage
- P_D = 1W
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

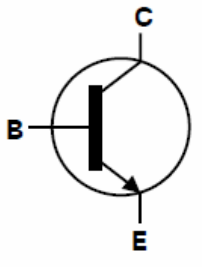
- Case: E-Line (TO-92 Compatible)
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.159 grams (approximate)

Applications

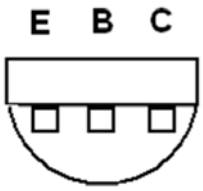
- LED Backlight Converters
- Emergency Lighting
- DC-DC Converters

E-Line

Top View



Device Symbol



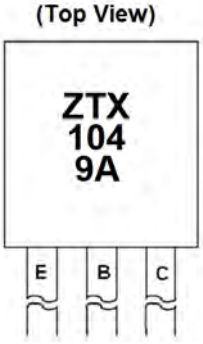
Bottom View
Pin-Out

Ordering Information (Note 4)

Part Number	Marking	Case	Quantity
ZTX1049ASTZ	ZTX1049A	E-Line	2,000 per box on tape
ZTX1049A	ZTX1049A	E-Line	4,000 lose

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com for more information about Diodes Incorporated's definitions of Halogen and Antimony free,"Green" and Lead-Free.
3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com.

Marking Information



ZTX1049A = Product type Marking Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

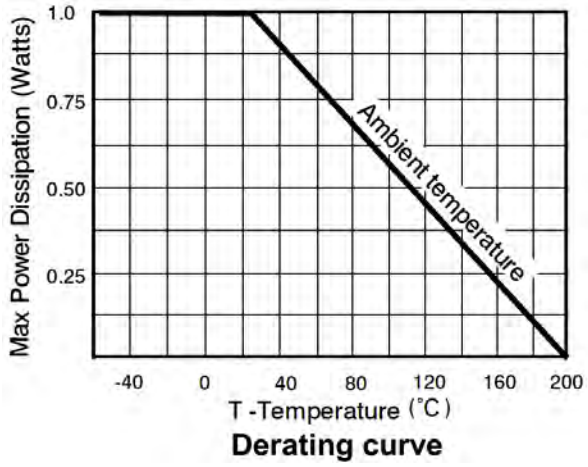
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	4	A
Peak Pulse Current	I_{CM}	20	A
Base Current	I_B	500	mA

Thermal Characteristics

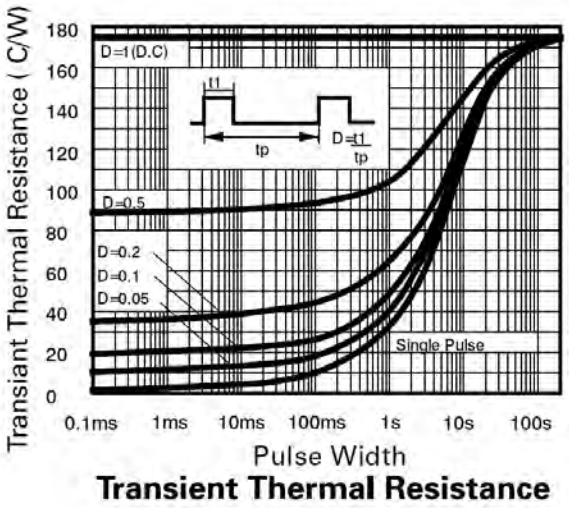
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	175	°C/W
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	63.75	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +200	°C

Notes: 5. For devices mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum.

Thermal Characteristics



Derating curve



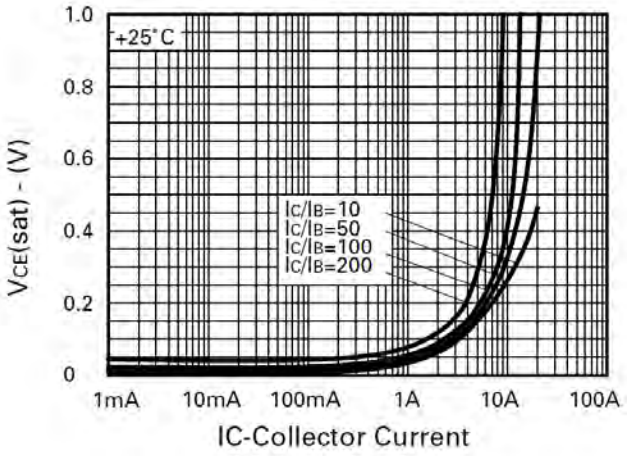
Transient Thermal Resistance

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

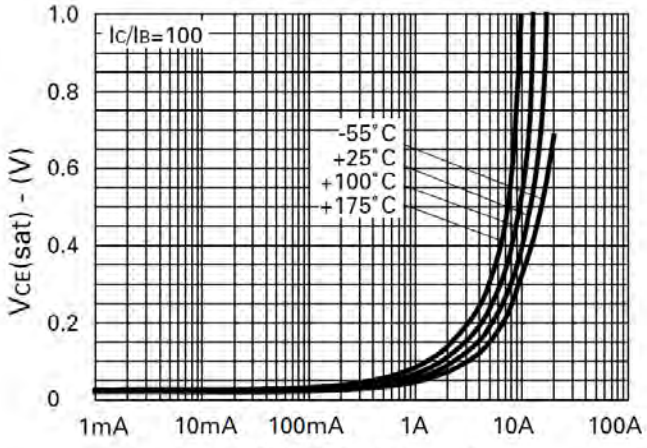
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	80	120	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage	BV_{CES}	80	120	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage	BV_{CEO}	25	30	—	V	I_C = 10mA
Collector-Emitter Breakdown Voltage	BV_{CEV}	80	120	—	V	I_C = 100µA, V_{EB} = 1V
Emitter-Base Breakdown Voltage	BV_{EBO}	5	8.75	—	V	I_E = 100µA
Collector Cut-off Current	I_{CBO}	—	0.3	10	nA	V_{CB} = 50V
Collector Emitter Cut-off Current	I_{CES}	—	0.3	10	nA	V_{CES} = 50V
Emitter Cut-off Current	I_{EBO}	—	0.3	10	nA	V_{EB} = 4V
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	—	30 60 125 155	45 80 180 220	mV	I_C = 500mA, I_B = 10mA I_C =1A, I_B = 10mA I_C =2A, I_B = 10mA I_C =4A, I_B = 50mA
Base-Emitter Saturation Voltage (Note 6)	$V_{BE(sat)}$	—	890	950	mV	I_C =4A, I_B = 50mA
Base-Emitter Turn-On Voltage (Note 6)	$V_{BE(on)}$	—	820	900	mV	I_C = 4A, V_{CE} = 2V
DC Current Gain (Note 6)	h_{FE}	250 300 300 200 35	430 450 450 350 70	— — 1200 — —	—	I_C = 10mA, V_{CE} = 2V I_C = 0.5A, V_{CE} = 2V I_C = 1A, V_{CE} = 2V I_C = 4A, V_{CE} = 2V I_C = 20A, V_{CE} = 2V
Current Gain-Bandwidth Product (Note 6)	f_T	—	180	—	MHz	V_{CE} = 10V, I_C = 50mA f = 50MHz
Output Capacitance (Note 6)	C_{obo}	—	45	60	pF	V_{CB} = 10V. f = 1MHz
Turn-On Times	t_{on}	—	125	—	ns	I_C = 4A, I_B = 40mA, V_{CC} = 10V
Turn-Off Times	t_{off}	—	380	—	ns	I_C = 4A, I_B = 40mA, V_{CC} = 10V

Notes: 6. Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤ 2%

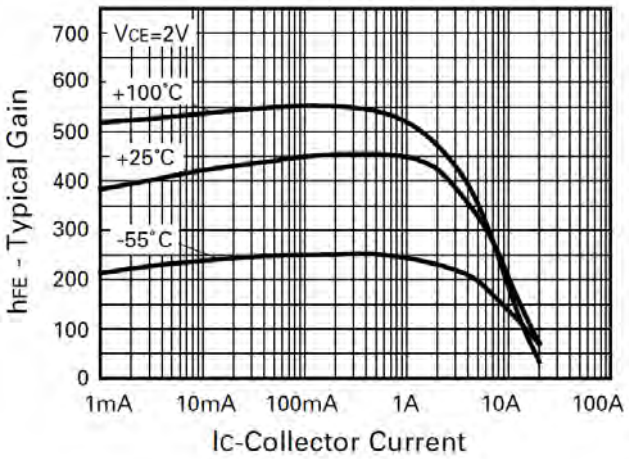
Typical Characteristics



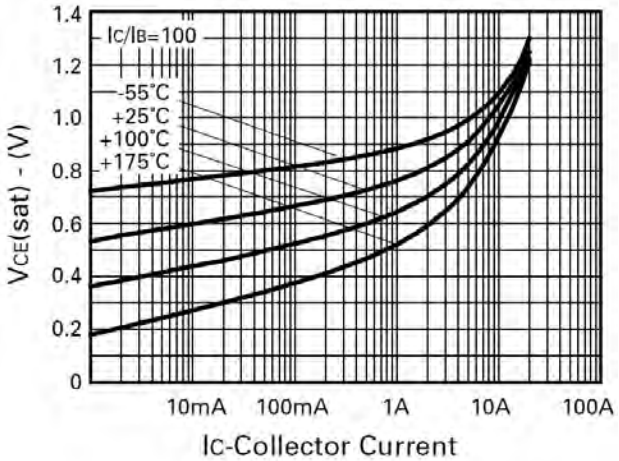
VCE(sat) v IC



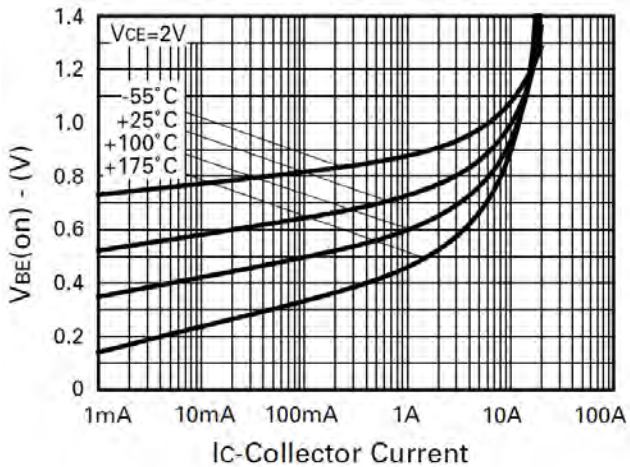
VCE(sat) v IC



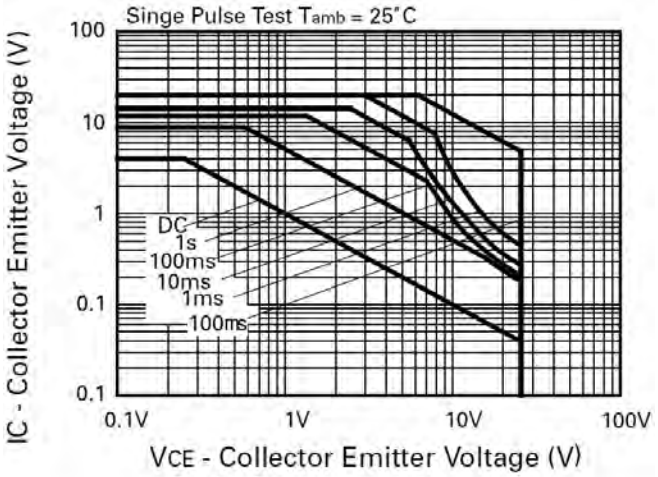
hFE V IC



VBE(sat) v IC



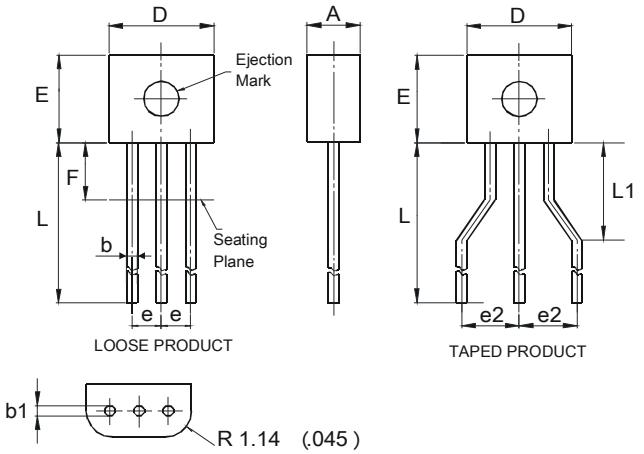
VBE(on) v IC



Safe Operating Area

Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



E-Line			
Dim	**Min**	**Max**	**Typ**
A	2.16	2.41	–
b	0.41	0.495	–
b1	0.41	0.495	–
D	4.37	4.77	–
E	3.61	4.01	–
e	–	–	1.27
e2	–	–	2.54
F	–	2.50	–
L	13.00	13.97	–
L1	2.50	3.50	–
All Dimensions in mm			

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